

Introduction

- Large areas of the U.S. electricity industry remain subject to the regulated public utility business model. Regulators at the state and federal level must approve addition of grid assets to the rate base;
- State regulators represent the interests of ratepayers who desire the lowest possible rates for the electricity they purchase; accordingly, regulators are exceedingly careful to ensure that utility investment expenditures they approve promote their constituency's interests;
- In this environment, regulators require full information on how ESS provides value in terms that they can demonstrate to their constituencies.

Objective/Approach

We are preparing a guidebook to :

- Inform regulators about the benefits of ESS
- Provide information on technical aspects of ESS
- Identify regulatory challenges to increased ESS deployment
- Suggest possible responses/solutions to challenges
- Develop model regulatory commission submissions requesting approval of rate base addition to permit recovery of ESS investments through electric rates

ESS Opportunities/Value Proposition

- ESS can reduce the cost of reserve acquisition
 - PNNL calculations suggest use of ESS could reduce the need for regulation reserves by 40%
- ESS can further reduce costs and emissions by allowing conventional generators to avoid holdback for reserve contingencies
 - Permits more efficient and environmentally acceptable operation
- ESS can provide load leveling, thereby reducing the use of expensive and environmentally harmful peaking plants
- ESS provides lower cost load following due to increased speed & accuracy in the up direction; because ESS resources need to recharge, load following in the down direction can be accommodated as well

These opportunities or value propositions can be obtained only if appropriate solutions and responses to ESS challenges can be devised

ESS issues and challenges to be overcome

- Regulatory acceptance has not been demonstrated
 - State regulation versus FERC jurisdiction
- Insufficient number of deployed systems raises perceived technological risk
- Cost-based compensation for regulated utilities versus value based compensation resulting from access to markets may make ESS difficult to finance for regulated utilities
- Regulated utility technological and financial biases against untested or unfamiliar technologies leads to a lag in the adoption of new technologies
- Technical and operational conflicts exist

Big Picture

Identifying barriers and possible solutions to deployment of ESS assets is a key element of a successful technology development and diffusion program



Source: Beacon Power

Beacon Flywheel Plant in NYISO



McIntosh, AL CAES Plant



Long Island, NY NaS Battery